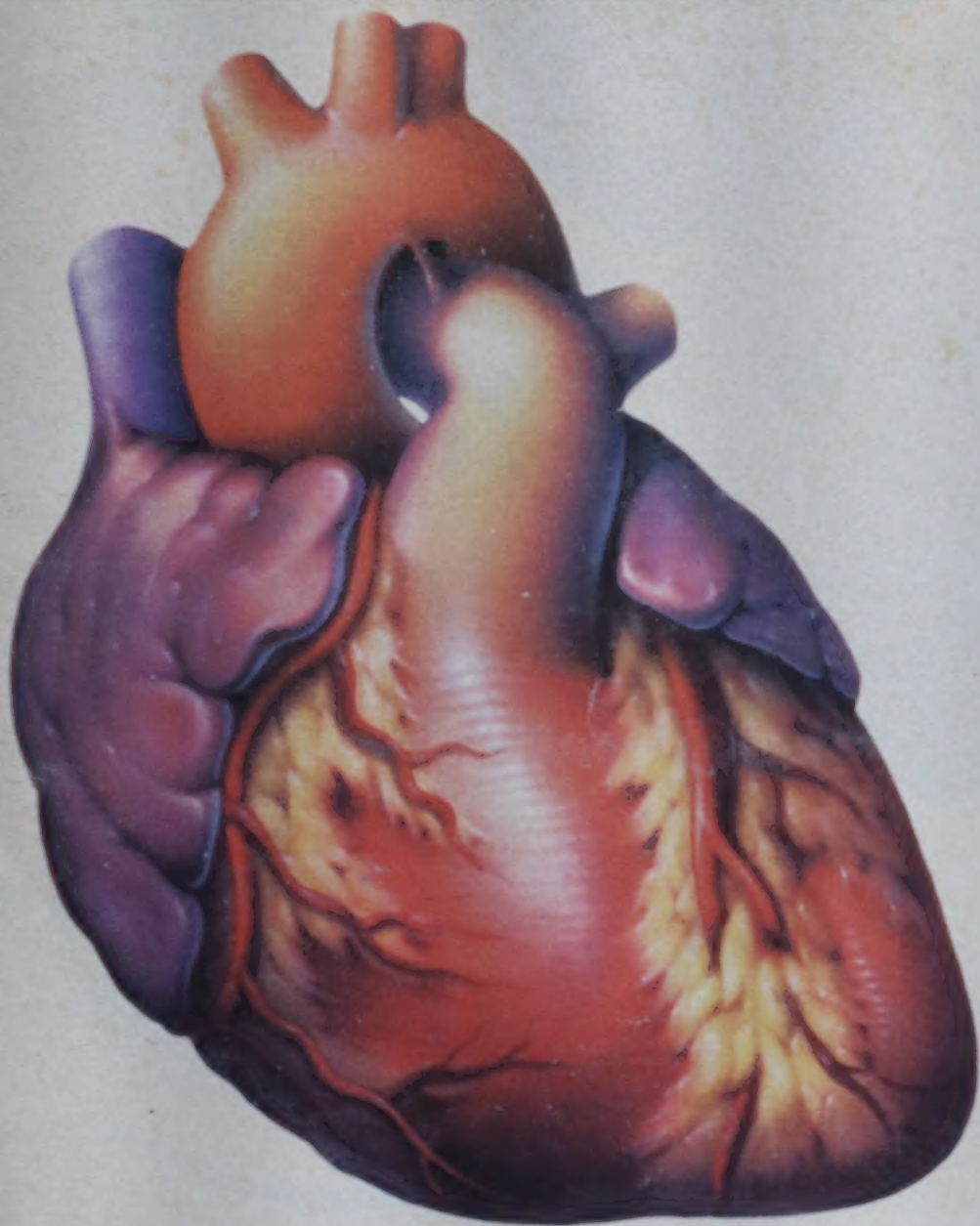


TheWeek

JAN 20, 2002



Cardiac Care

Common heart diseases, treatments and simple changes in lifestyle which can keep your heart healthy and strong



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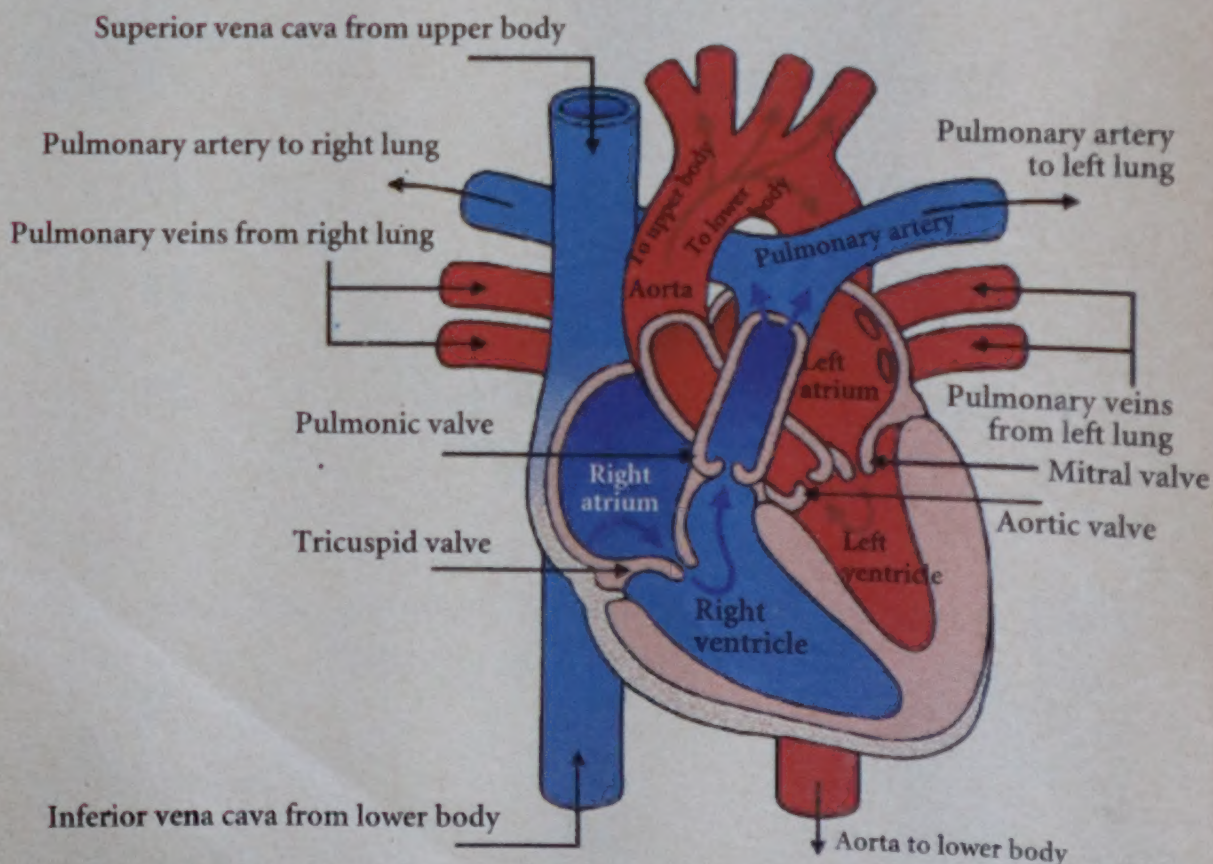
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Know your heart

The human heart is actually a pump, a powerful muscle the size of your fist which circulates blood to and from the millions of cells in the body. The heart is divided into four chambers. There are two chambers on each side with a wall-like divider called the septum between them. These two chambers have two passages called valves.

There are two valves on each side of the heart that allow blood to pass through it. The tricuspid valve on the right and the mitral valve on the left regulate blood flow between the atrium and the ventricle on each side. The right valve is called the



pulmonary valve and it allows blood to flow from the right ventricle to the pulmonary arteries, which supply the lungs. The left valve is called the aortic valve, which regulates blood flow from the left ventricle to the aorta.

In the normal adult, the heart pumps five litres of blood, which is recirculated continuously through the body. The blood moves from the heart into tubes called arteries, then into tiny tubes called capillaries and finally into the veins that lead back to the heart.

The entire cycle takes about 60 seconds, during which the blood brings nourishment and oxygen to all the cells in the tissues, organs, muscles and bones.

• Risk factors

• A risk factor is a condition associated with the development of heart and blood vessel disease. The more the risk factors, the greater your chance of developing heart disease. Therefore, reducing these risk factors is the key to a healthier heart.

• There are risk factors that cannot be controlled or changed, and there are risk factors that can be controlled.

• Risk factors that cannot be controlled

- (1) Age
- (2) Gender
- (3) Heredity

• Risk factors that can be controlled

- (1) High blood pressure
- (2) Smoking
- (3) Blood cholesterol levels
- (4) Stress

• In addition, there are other factors such as:

- (1) Diabetes
- (2) Lack of exercise
- (3) Obesity

• Age & Gender

• Both men and women are prone to heart and blood vessel disease. But estrogen delays the onset of disease in most women by about 10 years.

Heredit

Some studies say that if two immediate family members have had a heart attack (myocardial infarction) before age 55, the risk of developing heart disease is 5-10 times greater than in a family with no history of heart attack.

High blood pressure

Blood pressure is the force of your blood against the walls of your arteries. Normally, arteries are muscular and elastic. They stretch and contract as blood goes through them.

Your blood pressure consists of two numbers. The top reading is the systolic pressure (when your heart is contracting), the bottom number is the diastolic pressure (when the heart is relaxing). If your blood pressure consistently runs 140/90 or more, you may have hypertension (high blood pressure).

High blood pressure may increase the possibility of strokes due to damage to the blood vessels that lead to the brain; it may cause kidney damage, congestive heart failure; and may increase your risk for coronary artery disease.

Smoking

Smoking is a major cause of heart and blood vessel disease.

Overall, smokers experience a 70 per cent greater death rate from heart and blood vessel disease than non-smokers; and heavy smokers (two or more packs per day) have a death rate two to three times greater than non-smokers. Inhaling cigarette smoke produces temporary effects on the heart and blood vessels.



• **Cholesterol levels**

- Cholesterol is a substance manufactured by the body, but
- may also be found in certain foods. Egg yolk, shrimps,
- oysters, fatty red meat, lard, butter, and whole milk dairy
- products are high in saturated fats which may raise chole-
- terol blood levels in most people. Some vegetable oils, such
- as palm kernel oil, coconut oil and cocoa butter, are high
- in saturated fat.

• **Stress**

- If a person finds a situation, or anything, stressful, the
- feeling will trigger a physiological response. Physiological
- responses to stress include an increase in heart rate, blood
- pressure, and rate of breathing. These symptoms are caused
- by the release of adrenaline, which also narrows your
- arteries, and results in a greater workload on the heart. If
- you are unable to control your stress, you may be at risk for
- high blood pressure.



Exercise

Regular aerobic exercise (which increases your heart rate and breathing) can reduce the risk for heart disease by increasing the heart's functional capacity, lowering the oxygen requirements of the heart, increasing the tone of other muscles, and stimulating circulation.

Good aerobic activities include brisk walking, jogging, running, bicycling, and swimming. Ask your doctor which activity is best suited to your age and physical condition.

Diabetes

High blood sugar is associated with an increased risk of developing coronary artery disease. Hyperglycemia (carbohydrate intolerance) may be defined as a fasting blood glucose greater than 130 milligrams/decilitres. As blood sugar increases, there is an acceleration in the thickening of the coronary artery basement membrane which predisposes the patient to early development of coronary artery disease.

Diabetes is also associated with other risk factors like obesity, increased blood cholesterol level and high blood pressure. Regular checkups, and weight control are absolutely necessary.

Obesity

Weighing more than 30 per cent more than your ideal weight can double your risk for developing heart disease. Other risk factors such as high blood pressure, high cholesterol and onset of diabetes may also be linked to obesity.

It is very important to control your weight. The following are some tips for weight control:

- (1) Check with your doctor or dietitian regarding how many calories you need a day
- (2) Have the dietitian instruct you on a proper diet
- (3) Avoid crash or fad diets as the weight loss is usually only temporary
- (4) Exercise regularly
- (5) Set realistic goals
- (6) Once you have achieved your goals, continue the new eating habits

Diagnosing heart disease

A cardiologist relies on various tests and scans to diagnose a heart attack and to identify sites of arterial blockage and tissue damage. ECG recordings of electrical activity within the heart, supported by blood tests, provide data for an initial assessment of the patient's condition.

Images of the heart and coronary arteries supplied by angiograms and radioisotope scans locate specific areas of damage and blockage. Ultrasound studies called echocardiogram evaluate the heart's function. With such data, the attending physician can pursue proper treatment and anticipate potential complications.

Phonocardiography

Phonocardiography is the recording of heart sounds and murmurs. It is more precise than a stethoscope because it provides a permanent visual record that can be used to obtain precise timing information and can be used as baseline data for comparison with later findings.

Echocardiography

It is a comfortable technique for the patient and is capable of establishing a diagnosis for several types of heart disease, especially those involving the valves. Types include M-mode, Doppler, and transesophageal echocardiography.



Radioisotope examination

Several types of radioisotope examination are used to detect heart disease. A radioisotope imaging agent is injected into the patient, and a scintillation camera is then used to make an image of the distribution of radioactivity.

Angiocardiology

It is the x-ray examination of the heart after injection of a radiopaque contrast medium through a catheter at various locations in the heart. The films show the size and motion of the heart chambers and can demonstrate aortic or mitral valve regurgitation.

Arteriography

In coronary arteriography the contrast medium is injected through a catheter into the orifice of each coronary artery. The films show atherosclerotic obstructions of the arteries

- and are useful in planning coronary bypass surgery, percutaneous transluminal angioplasty, or stents.
-
- **Stress test**
- This test is designed to determine the risk for your heart
- from exercise. Anyone with a heart problem or history of

Heart disease and exercise

High risk individuals

People belonging to the following categories should avoid intense exercise or begin only with careful monitoring:

(1) Those who suffer from uncontrolled diabetes, seizures, high blood pressure, a heart attack within the last six months, unstable angina, significant aortic valve disease, or aortic aneurysm.

(2) Research shows that older people who start with vigorous exercise are at a slightly higher than average risk for a heart attack during the first year, but over time, regular exercise is likely to reduce this risk.

(3) Sedentary people should be cautious. One major study found that sedentary people who throw themselves into a gruelling

workout increase their risk of heart attack 107 times beyond that which would occur with low or no exertion.

(4) Young people with genetic or inborn heart disorders should avoid intensive competitive sports.

It is often difficult for a doctor to predict health problems that might arise as the result of an exercise programme. Some doctors use a questionnaire for people over 40 who want to have more intense exercise programmes. Those who answer "yes" to the following questions should have a complete medical examination before formulating an exercise regimen.

(1) Has a doctor recommended medically supervised activity because of a heart condition?

(2) Is chest pain brought on by

heart disease should have a stress test before commencing
on an exercise programme. Experts recommend this test
before any vigorous exercise schedule for older persons
who are sedentary, even in the absence of known or sus-
pected cardiovascular disease.

physical activity?

- (3) Has chest pain occurred during the previous month?
- (4) Does the person faint or fall over from dizziness?

- (5) Is bone or joint pain intensified by exercise?
- (6) Has medication been prescribed for hypertension or heart problems?



Listen to warning signs

Many of young men who die suddenly during a workout have previously experienced, and ignored, warning signs of heart disease. Apart from avoiding risky activities, the best preventive tactic is simply to listen to the body and seek medical help at the first sign of symptoms during or following exercise. They include the following:

- (1) Chest pain.
- (2) Weakness.
- (3) Irregular heartbeat.
- (4) Undue shortness of breath.

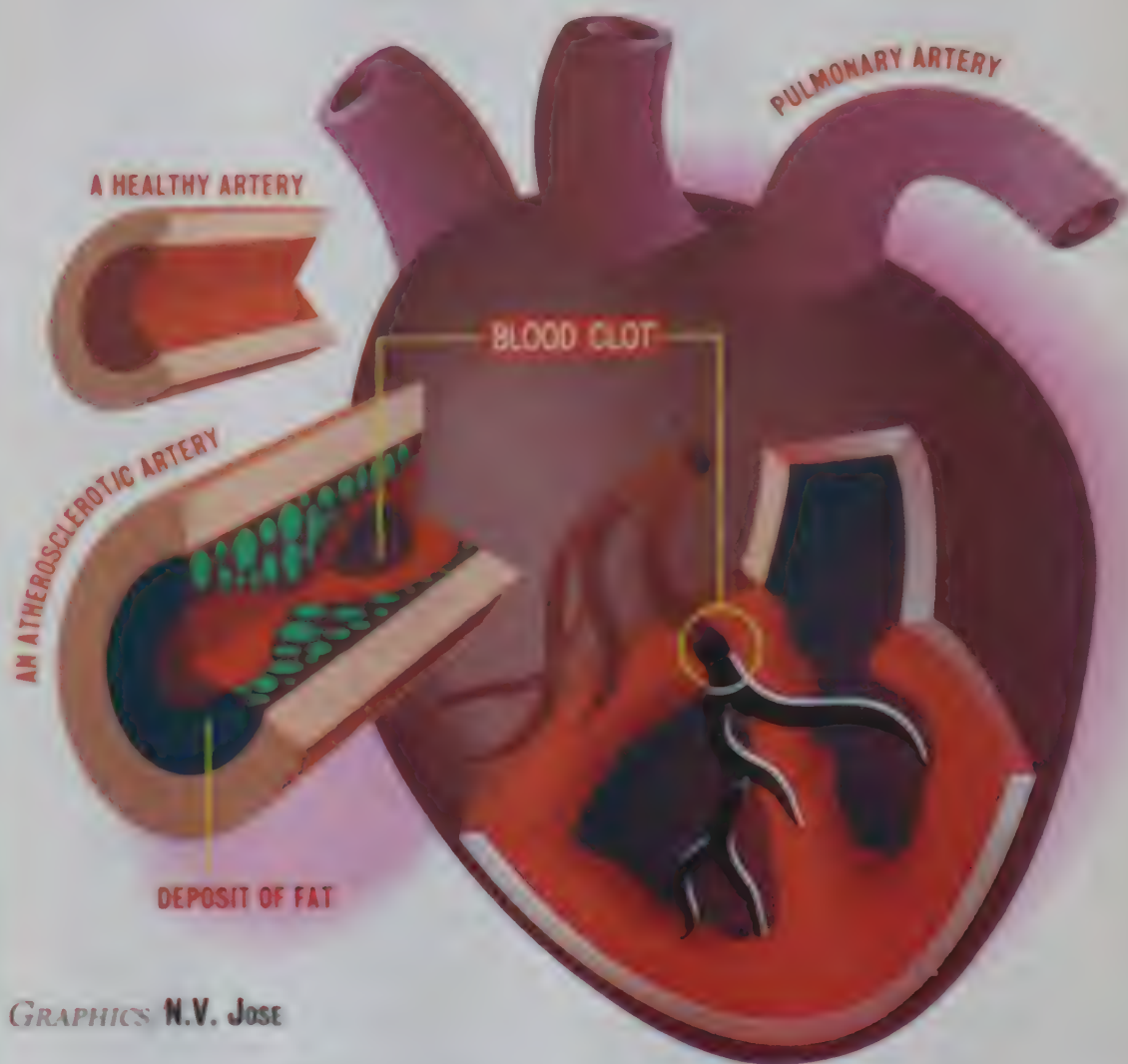
Heart diseases

Most cases of heart attacks are the end result of coronary heart disease, an atherosclerotic condition that clogs coronary arteries with fatty, calcified plaques. During the early 1980s, researchers confirmed that the precipitating cause of nearly all heart attacks is not the obstructive plaque itself, but the sudden formation of a blood clot on top of plaque that cuts off blood flow in an already narrowed vessel.

Though the step-by-step process leading to a heart attack is not fully understood, the major risk factors that cause heart failure are known. Of these, the main ones are high blood pressure, high cholesterol, obesity, smoking, and a sedentary lifestyle. Stress is also believed to raise the risk, and exertion and excitement can act as triggers for an attack.

Men who are above 50 and with a family history of heart disease are more predisposed to a heart attack. High levels of estrogen are thought to protect premenopausal women fairly well from heart attack, but the risk increases significantly after menopause. Some women opt for hormone replacement therapy after menopause; the choice should be made with full knowledge that elevated estrogen levels also increase the risk for breast and uterine cancers.

ATHEROSCLEROSIS



GRAPHICS N.V. JOSE

• Common heart diseases

- **Arteriosclerosis:** A disease of the arteries in which fatty material is deposited on the vessel wall, resulting in narrowing and eventual impairment of blood flow. It is classified into three categories: atherosclerosis, Monckeberg's medial calcific sclerosis and arteriolosclerosis.
- **Arrhythmogenic right ventricular dysplasia:** ARVD is a genetic, progressive heart condition in which the muscle of the right ventricle is replaced by fat and fibrosis, which causes abnormal heart rhythms. It accounts for up to one

fifth of sudden cardiac death in people under 35 years of age.

Congenital heart disease (CHD): Is an abnormality of cardiac structure and function that develops during gestation and is present at birth. In some cases, it may not present itself for many years.

Cardiomyopathies: Caused by viral infections; heart attacks; alcoholism; long-term, severe hypertension and usually result in inadequate heart pumping.

Enlarged heart: When disease attacks the muscles of the heart, the ability of the heart to function properly as a pump is reduced and causes the blood flow to slow and the heart to enlarge. It is a sign of serious disease of the heart muscle.

Endocarditis: An inflammation of the inside lining of the heart chambers and heart valves (endocardium). Most people who develop endocarditis have underlying valvular heart disease. Injection drug use is a common risk factor for developing endocarditis. Bacterial infection is the most common source of endocarditis.

Heart attack: This occurs when an area of heart muscle dies or is damaged because of inadequate supply of oxygen to that area.

Also called myocardial infarction (MI), it is often caused by a clot that blocks one of the coronary arteries.

Congestive heart failure (CHF): The heart loses the ability to pump blood efficiently, thereby failing to meet the demands of the body. Heart failure may affect the right, left or both sides of the heart.

Murmurs: Abnormal heart sounds or murmurs are blowing, whooshing, or rasping sounds—the result of vibrations caused by abnormal (turbulent) blood flow patterns.

Palpitations: The sensation of a rapidly or irregularly beating heart. Palpitations can occur normally when your heart is working hard as when you have just exercised, have a fever, or are feeling anxious.

- **Cholesterol:** When cholesterol levels in the bloodstream become too high, the likelihood of developing cholesterol-containing fatty deposits in blood vessels increases. This means an increased risk of a heart attack. Also decreased blood flow to your brain can cause a stroke, and less blood flowing to your lower limbs may result in gangrene.
- **Hypertension:** This is characterised by high blood pressure. Blood pressure is determined by the amount of blood pumped by the heart, and the size and condition of the arteries.
- **Postural Orthostatic Tachycardia Syndrome (POTS):** This is clinically defined as a heart rate increase of 30 beats per minute or more from lying down to the standing position within ten minutes or less. Some patients experience supine tachycardia, which is usually transient in nature and often accompanied by sleep disturbances.
- **Tetralogy of Fallot:** A combination of four heart defects, which include a hole between the ventricles, a narrowed



outlet to the pulmonary artery, often in conjunction with an abnormal pulmonary valve, an aorta that overrides or straddles the septum between the ventricles and thickened and enlarged heart muscle tissue in the right ventricle.

Thrombosis: Formation of a blood clot (thrombus) in the heart or a blood vessel. A thrombus can block blood flow at the point of clot formation or break free to block it elsewhere (embolism).

Mitral valve prolapse: A disorder in which the mitral heart valve billows out and does not close properly, allowing blood to leak (backflow) into the left atrium. Also called Barlow's syndrome.

Long QT syndrome (LQTS): This is an abnormality of the heart's electrical system due to defects in heart muscle cell structures called ion channels. This can lead to sudden loss of consciousness and may cause sudden cardiac death.

• Treatment

• **S**tandard drug therapy includes a painkiller such as
• morphine, vasodilators such as nitroglycerine to ex-
• pand blood vessels, beta-adrenergic blocker drugs to calm
• the heart, and aspirin to reduce clotting. In some cases,
• clot-dissolving drugs like t-PA or streptokinase are also
• administered. Emergency angioplasty, and possibly sur-
• gery, might be performed to remove a clot, reopen a
• clogged artery, or bypass blocked arteries.

• The heart patients, once hospitalised, are hooked to
• ECG machines for constant monitoring, in case heart
• rhythm abnormalities develop. If the heart starts beating
• too fast or too slow, various medications may be given.
• Some patients may be fitted with pacemakers. If a patient
• experiences a dangerous arrhythmia known as ventricular
• fibrillation, an electric shock to the chest is administered.

• Patients who show signs of congestive heart failure are
• given a variety of medications to decrease strain on the
• heart and to encourage the heart to beat more forcefully.

• Those recovering from heart attacks are urged to get
• back on their feet as quickly as possible, which reduces the
• chances of blood clots forming in the deep veins of the legs;
• the clots could travel through the circulatory system and
• lodge in the lung, creating a blockage.

• Mild exercise is recommended, but nothing that re-
• quires significant exertion. As a preventive measure, most

heart attack survivors take a daily aspirin to thin the blood. •
Other drugs may also be prescribed, depending on the •
patient. •

Medicines usually prescribed

A variety of medicines are prescribed for patients with •
heart disease. It is important for both patients with heart •
disease and those who care for them to understand the •
prescribed medication, to follow the directions of usage, •
and to be able to recognise the possible side effects associ- •
ated with the medicine. The medicines most commonly •
prescribed for heart disease include: •

ACE inhibitors: ACE inhibitors are a type of medication •
that dilates (widens) the blood vessels to improve the •
amount of blood the heart pumps. ACE inhibitors also •
increase blood flow, which will help decrease the amount •
of work the heart has to do. These drugs block some of the •
harmful substances (angiotensin) that are produced as a •
result of heart failure. They also block some of the harmful •
responses of the endocrine system that may occur with •
heart failure. •

Aldosterone inhibitor: Spironolactone is a potassium- •
sparing diuretic. It is prescribed to reduce the swelling and •
water build-up caused by heart failure. Diuretics cause the •
kidneys to get rid of excess water and salt from the tissues •
and blood into the urine. •

Angiotensin II Receptor Blocker (ARBs): ARBs are used •
to decrease blood pressure in people with heart failure. •
ARBs decrease certain chemicals that narrow the blood •
vessels so blood can flow more easily through your body. •
They also decrease certain chemicals that cause salt and •
fluid build-up in the body. •

Beta-blockers: Beta-blockers improve the heart's ability •
to relax and decrease the production of harmful sub- •
stances produced by the body in response to heart failure. •

Calcium channel blockers: Calcium channel blockers are •



- prescribed to treat angina (chest pain) and high blood pressure. Calcium channel blockers affect the movement of calcium in the cells of the heart and blood vessels. As a result, the drugs relax blood vessels and increase the supply of blood and oxygen to the heart, while reducing its workload.
- **Cholesterol-lowering drugs:** Cholesterol helps your body build new cells, insulate nerves, and produce hormones. But too much of it in your bloodstream can lead to coronary artery disease. Normally, the liver makes all the cholesterol the body needs. But cholesterol also enters your body from dietary sources like milk, eggs and meat.
- **Digoxin:** Digoxin helps an injured or weakened heart to work efficiently and to send blood through the body. It strengthens the force of the heart muscle's contractions, helps restore a normal, steady heart rhythm, and improves blood circulation.
- **Diuretics:** Diuretics, commonly known as "water pills", cause the kidneys to get rid of excess water and salt from the tissues and bloodstream into the urine. Getting rid of excess fluid makes it easier for your heart to pump. It is

used to treat high blood pressure and reduce the swelling and water build-up caused by various medical problems, including heart failure. It also helps make breathing easier.

Inotropic therapy: This is used to stimulate an injured or weakened heart to pump harder to send blood through the body. It helps the force of the heart muscle's contractions and relaxes constricted blood vessels so blood can flow more smoothly. Inotropic therapy may also speed up the heart's rhythm.

Potassium or Magnesium: Potassium and magnesium replace minerals that can be lost because of increased urination when taking diuretics.

Vasodilators: Vasodilators are used to treat heart failure and control high blood pressure by relaxing the blood vessels so blood can flow more easily through the body. Vasodilators are prescribed for patients who cannot take ACE inhibitors.

Warfarin: Warfarin is an anticoagulant medication. "Anti" means "against," and "coagulant" means "causing blood clotting." Therefore, warfarin helps prevent clots from forming in the blood.

• Heart care

• **R**egular, light aerobic exercise greatly enhances recovery from heart attack. If you already have a heart condition, schedule a stress test before beginning an exercise programme in order to determine how much exertion is safe.

• Heart attack survivors are advised to exercise with other people rather than alone during the first months of recovery.

• Quit smoking

• No cigarettes are considered safe. Many smokers who have switched to low tar and low nicotine cigarettes smoke more or inhale more deeply to make up for the decreased nicotine. By inhaling more deeply, smokers may increase their risk of disease.

• But once you quit smoking, the risk of heart and blood vessel disease gradually decreases. Ten years after quitting, for example, your risk of death from heart disease is almost the same as if you had never smoked. It is important to stop smoking before the signs of this disease appear. Don't wait until you have heart and blood vessel disease to kick the butt, quit smoking now.

• Lowering high blood pressure

• High blood pressure may not be cured but it can be



controlled. Some methods that your doctor may recommend to you include:

- (1) Reducing the amount of salt (sodium) intake
- (2) Weight reduction
- (3) Stress reduction
- (4) Exercise
- (5) Regular visits to the doctor

Avoiding high cholesterol food

Observing some simple food habits can mean a lot in preventing heart diseases:

- (1) Eat fish or poultry more than red meat, consuming not more than 6 ounces a day
- (2) When red meat (beef, pork, lamb) is prepared, trim all visible fat before cooking. Serve small portions and use select cuts
- (3) Remove the skin from poultry before cooking
- (4) Serve more "white" meat from poultry than

- “dark” meat
- (5) Consume no more than 3 egg yolks per week
- (6) Cook with liquid vegetable oils and use more poly-unsaturated margarines (such as safflower, cottonseed, corn, and soybean)
- Keep changes in your diet moderate with careful use of saturated fats and cholesterol.

• **Managing stress**

- Stress management is a learning process. First, you need to identify the particular cause of your stress. Second, you need to take steps to change those circumstances that are stressful, whenever possible. Third, you need to relearn ways to cope with stress in your everyday life. The following are a few suggestions for coping with stress:

- (1) Do not waste energy being upset over little things. Remember that stress is our reaction to situations, not the situation itself. Often it helps to talk it out and get a different perspective of the situation while at the same time venting your concerns.

- (2) Escape from the stress for a period of time. Exercise, taking a walk before lunch to get rid of the morning's frustrations or taking a walk after work to help unwind, can be very helpful to reduce your stress.

- (3) Beware of the super-person urges. Set priorities, establish realistic goals and stop trying to do too much.

- (4) Take time to relax daily whether you learn relaxation techniques or just take time out for a favourite hobby.

- (5) Take it easy with criticism or arguments. Stand your ground on what you believe is right, but make allowances for the other party. Search for the “positives” of an argument, of a critical person, as well as your own positive qualities.

- (6) Finally, if stress seems out of control, discuss it further with your doctor or health care professional.



Relaxation techniques

Reducing stress by training the mind and body to relax may be one of the risk factors that you can control to help prevent heart attack. It can aid in recovery too. Many techniques promote relaxation—among them, meditation and yoga. Relaxation has also been shown to provide relief from pain, which may be encountered during the recovery period.

Do-it-yourself remedies



(1) Do not take birth-control pills if you have had a heart attack; they are linked to increased blood-clotting activity.

(2) Consider getting a pet. Pet owners recover more quickly from heart attacks and tend to live longer than people without pets.

(3) Remember: Having a heart attack does not make you an invalid. You can best heal your heart by remaining active.

(4) Keep in touch with friends and family. Studies show that people with poor social contacts are more vulnerable to heart disease.

- **Diet and nutrition**

- About two-thirds of cholesterol in the body does not come from cholesterol in food but is manufactured by the liver, its production stimulated by saturated fat. Although there is much controversy on the effects of fat on health, virtually all experts strongly advise limiting intake of saturated fats (found in animal products) and trans-fatty acids (found in commercial baked goods and fast foods).

- Reducing consumption of saturated fats and trans-fatty acids is the first essential step in managing cholest-



terol levels through diet. Saturated fats are found predominantly in animal products, including meat and dairy products. Saturated fats in the diet increase blood cholesterol levels. Tropical oils like palm, coconut, and cocoa butter are high in saturated fats. Evidence is lacking, however, about their effects on the heart. The countries with the highest palm-oil intake, Costa Rica and Malaysia, also have much lower heart disease rates and cholesterol levels than western nations.

People should, however, try to limit even reduced-fat foods and fat substitutes in their diets. Although one might believe that eating reduced-fat or fat substitute products means consuming fewer calories, this is often not the case. Many commercial, lowered-fat products have extra calories from sugar and other carbohydrates. A study has found that people who consume foods that contain fat substitutes do not learn to dislike fatty foods, while people

- who learn to cook using foods naturally lacking or low in fat eventually lose their taste for high fat diets.

The basic goals of a heart-healthy diet are to keep salt, sugar, and saturated fat to a minimum to reduce cholesterol, control blood pressure, and control weight. Eating magnesium-rich foods such as nuts, beans, bran, fish, and dark green vegetables may help prevent heart attack.

Harmful free radicals that can cause heart diseases can be neutralised by antioxidants like vitamins A, C, and E. Fruits, vegetables, and grains supply many of the antioxidant vitamins. Eating root vegetables such as carrots may also help prevent heart attack. These vegetables lower cholesterol over the long term and reduce blood-clotting activity.

THE WEEK SUPPLEMENT

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